



Information Disclosure Statement

Regarding the reference labeled as "AC", a typographic mistake was made with respect to the document number. The correct document number is "6,509,621." Consideration of this reference is respectfully requested.

Allowable Subject Matter

Claim 10 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in dependent form including all of the limitations of the base claim and intervening claims. The Examiner's indication of allowable subject matter is gratefully acknowledged. Since independent claim 1 is in condition for allowance, dependent claim 10 is allowable therewith.

Claim Rejections - 35 U.S.C. § 102

Claims 1-8 and 11-20 were rejected under 35 U.S.C. § 102(b) as being anticipated by Kryder. Anticipation requires that each and every element of a claim be found in a single prior art reference. *In re Dillon* 16 U.S.P.Q.2d (BNA) 1897, 1908 (Fed. Cir. 1990) (en banc), cert. denied, 500 U.S. 904 (1991).

Independent Claim 1

Independent claim 1 requires "producing a write current having a first component for generating a magnetic write field; and embedding a second component in the write current to generate a high frequency magnetic field . . . wherein the area of magnetic resonance within the magnetic media is magnetically polarized in the direction of the magnetic write field." The write current of independent claim 1 therefore includes both a first component for generating a magnetic write field and a second component for generating a high frequency magnetic field. This concept is illustrated in FIG. 5, which shows a write current [104] having a first component [106] and a second component [103]. Because the write current [104] includes both the first component [106] for generating a magnetic write field, and a second

component [103] for generating a high frequency magnetic field, the write current described by independent claim 1 can be produced by a typical magnetic writer (such as the PRIOR ART illustration shown in FIG. 2) having a single coil. For instance, a current having both a first component for generating a magnetic write field and a second component for generating a high frequency field would be driven through conductive coil 48 of FIG. 2 to generate both the magnetic write field and the high frequency field.

This is in contrast with Kryder, which teaches a system in which “a power supply 46 and a loop of wire 48 are used to establish a global static magnetic field . . . [and] a radio frequency generator 50 and a loop of wire 52 are used to establish a global radio frequency field . . .” (Col. 5, ll. 39-45). Therefore, Kryder requires two separate current generators, a current generator responsible for generating the global static magnetic field and a current generator for generating the radio frequency field. This difference is explicitly shown in FIGS. 3 and 5 of Kryder. As shown in both FIGS. 3 and 5, Kryder requires an RF generator 50 and a DC power supply 46, wherein the DC power supply generates current in loop of wire 48 and RF generator 50 generates current in loop of wire 52. Therefore, Kryder requires two loops of wires and that invention could not be implemented on a writer having a single coil as discussed above.

For the reasons discussed above, independent claim 1 is in condition for allowance.

Dependent Claims 2-8 and 11-13

Dependent claims 2-8 and 11-13 were also rejected as anticipated by the Kryder reference. Claims 2-8 and 11-13 depend from independent claim 1. As such, the claims are allowable with their independent base claim since any claim depending from a patentable independent claim is also patentable. See M.P.E.P. 2143.03, citing In re Fine, 5 U.S.P.Q.2d (BNA) 1596 (Fed. Cir. 1988). In addition, it is respectfully submitted that the combinations of features recited in at least claims 2-3, 5 and 7 are patentable on their own merits.

Dependent claim 2 requires “wherein embedding the second component in the write current

comprises configuring a write current circuit to produce a high frequency oscillation in the write current following a transition in the write current from one direction to the opposite direction.” In contrast, Kryder does not teach using a write current circuit to produce high frequency oscillations following a transition in the write current from one direction to an opposite direction. Generation of a high frequency (RF) field in Kryder is accomplished solely through the use of RF generator 50. The portion of Kryder pointed to by the Office Action states “the frequency of radio frequency field is kept constant and the globally applied DC magnetic field H_a is changed in magnitude . . . by properly selecting the radio frequency, it will then be possible to have switching in the bit cell . . .” (Col. 5, ll. 58-67). However, this does not teach “configuring a write current circuit to produce a high frequency oscillation in the write current following a transition in the write current from one direction to the opposite direction.” Rather, it teaches the concepts shown in FIGS. 3 and 5 of Kryder, in which generation of a RF field is done with RF generator 50 and loop of wire 52, and generation of a global magnetic field is done with power supply 46 and loop of wire 48. Dependent claim 2 is therefore in condition for allowance.

Dependent claim 3 requires “wherein embedding the second component in the write current comprises modulating the write current with a high frequency current.” This is in contrast with Kryder, which teaches generation of a global static magnetic field using power supply 46 and loop of wire 48, and generation of a radio frequency field using radio frequency generator 50 and a loop of wire 52. (Col. 5, ll. 39-45). Therefore, Kryder teaches the use of two separate currents (one generated by power supply 46 and the other generated by radio frequency generator 50), with no interaction or modulation between the currents (one current being driven through loop of wire 48 and the other current being driven through loop of wire 52). Dependent claim 3 is therefore in condition for allowance.

Dependent claim 5 requires “wherein the magnetic precession within the magnetic write pole *generates* the high frequency magnetic field.” This is in contrast with Kryder, which teaches “a radio frequency field tuned to the resonant frequency at which the spins precessed, the precession could be made sufficiently large in amplitude to cause the magnetization in the material to switch from one orientation to

another.” Therefore, Kryder teaches using spin precession to help with switching the magnetization of a magnetic material. Kryder does not teach using spin precession to “generate the high frequency field” as required by dependent claim 5. Dependent claim 5 is therefore in condition for allowance.

Dependent claim 7 requires “wherein the write current generates a magnetic field that includes the magnetic write field and an embedded high frequency magnetic field.” As discussed above, Kryder does not teach a write current used to generate both the magnetic write field and an embedded high frequency magnetic field. Rather, Kryder teaches generation of a magnetic field using power supply 46 and loop of wire 48, and generation of a radio frequency field using radio frequency generator 50 and a loop of wire 52. (Col. 5, ll. 39-45). Therefore, dependent claim 7 is in condition for allowance.

Independent claim 14

Independent claim 14 requires “a write pole responsive to a write current to generate a magnetic write field; and a write current generating circuit for generating the write current with a first component generating the magnetic write field and a second component generating a high frequency magnetic field ... wherein the area of magnetic resonance within the magnetic media is magnetically polarized in the direction of the magnetic write field.” As described by independent claim 14, the write current driven through a write pole consists of a first component and a second component. This concept is shown in FIG. 5 by write current 104, which includes both a first component [106] and a second component [103]. A benefit of having a single write current with both the magnetic write field component and the high frequency field component is that a single coil (typical in standard writers such as the one shown in FIG. 2 of the application) can be used to deliver both the magnetic write field and the high frequency field.

This is in contrast with Kryder, which teaches a system in which “a power supply 46 and a loop of wire 48 are used to establish a global static magnetic field . . . [and] a radio frequency generator 50 and a loop of wire 52 are used to establish a global radio frequency field . . .” (Col. 5, ll. 39-45). Therefore, Kryder teaches the use of two separate currents, each current driven through a separate loop

of wire (48 and 50 respectively) to generate the desired magnetic fields. This difference is explicitly shown in FIGS. 3 and 5 of Kryder. As shown in FIGS. 3 and 5, Kryder requires a DC power supply 46 and a RF generator 50, each driving a current through separate loops of wire 48 and 52, respectively. Therefore, Kryder does not teach a write current having a first component for generating the magnetic write field and a second component for generating a high frequency magnetic field

Furthermore, the RF generator 50 as shown in FIG. 3 is not located near write pole 44, but is applied “globally to the medium” (Col. 5, ll. 48-50). Therefore, the write pole 44 in Kryder is not responsive to current generated by RF generator 50 as required by independent claim 14. For these reasons, independent claim 14 is therefore in condition for allowance.

Dependent Claims 15-20

Dependent claims 15-20 were also rejected as anticipated by the Kryder reference. Claims 15-20 depend from independent claim 14. As such, the claims are allowable with their independent base claim since any claim depending from a patentable independent claim is also patentable. See M.P.E.P. 2143.03, citing In re Fine, 5 U.S.P.Q.2d (BNA) 1596 (Fed. Cir. 1988). In addition, it is respectfully submitted that the combination of features recited in at least claims 15, 16 and 17 are patentable on their own merits.

Dependent claim 15 requires as a limitation “wherein the second component of the write current is created by configuring the write current generating circuit to produce high frequency oscillations following a transition in the write current from one direction to an opposite direction.” For the reasons discussed above with respect to dependent claim 2, Kryder does not teach using the write current generating circuit to produce high frequency oscillations following a transition in the write current from one direction to an opposite direction. Dependent claim 15 is therefore in condition for allowance.

Dependent claim 16 requires as a limitation “wherein the second component of the write current is created by modulating the write current with a high frequency current.” For the reasons discussed

above with respect to dependent claim 3, Kryder does not teach modulating the write current with a high frequency current. Dependent claim 16 is therefore in condition for allowance.

Dependent claim 17 requires as a limitation “wherein the second component of the write current creates magnetic precession within the write pole, wherein magnetic precession within the write pole generates the high frequency field.” For the reasons discussed above with respect to dependent claim 5, Kryder does not teach using magnetic precession within the write pole to generate the high frequency field. Dependent claim 17 is therefore in condition for allowance.

Claim Rejections - 35 U.S.C. § 103

Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Kryder in view of Pelhos. Claim 9 depends from independent claim 1. As such, claim 9 is allowable with its independent base claim.

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CONCLUSION

In view of the foregoing, all pending claims 1-20 are in condition for allowance. A Notice to that effect is respectfully requested.

Respectfully submitted,

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